AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for tracking a carrier frequency offset and a sampling frequency offset between a transmitter for concurrently transmitting subcarriers that have orthogonality and a receiver for receiving them, comprising:

(a) detecting data received from the transmitter by using a first signal, and tracking a phase offset caused by the carrier frequency offset by using the detected received data;

(b) detecting the data received from the transmitter by using the first signal, and tracking the phase offset caused by the sampling frequency offset by using the detected received data, including calculating a gradient value of a straight line that corresponds to the phase offset on the time axis by using a linear regression method;

(c) compensating for the phase offset caused by the carrier frequency offset between the transmitter and the receiver according to the phase offset tracked in (a); and

(d) compensating for the phase offset caused by the sampling frequency offset between the transmitter and the receiver according to the phase offset tracked in (b).

2. (Currently Amended) The method of claim 1, ~~wherein (a) and (b)~~further ~~comprise~~ comprising tracking the phase offset in consideration of a gain value of each subchannel on which a pilot signal is located.

3. (Currently Amended) The method of claim 2, ~~wherein (a) and (b)~~ further ~~comprise~~ comprising comparing a Euclidean distance between the first signal and theoretical signals, and detecting the received data by using the theoretical value that corresponds to the nearest distance.

4. (Canceled)

5. (Currently Amended) The method of claim [4]1, wherein an estimate of the gradient value of the straight line satisfies the subsequent equation:

$$\hat{\alpha}_i = \frac{\sum_{j \in \{pilot\_index\}} (w_j + w_{-j}) \cdot j \cdot \phi_{i,j} + \sum_{j \in \{data\_index\}} (w_j + w_{-j}) \cdot j \cdot \phi'_{i,j}}{\sum_{j \in \{pilot\_index\}} (w_j + w_{-j}) \cdot j^2 + \sum_{j \in \{data\_index\}} (w_j + w_{-j}) \cdot j^2}$$

where $\hat{\alpha}_i$ is an es timate of the gradient value of the straight line that corresponds to the phase offset on the time axis, $\phi_{i,j}$ is the phase offset estimate of pilot signal located on subchannel of index j, $\phi'_{i,j}$ is the phase offset estimate of data signal located on subchannel of index j, i is an OFDM symbol index, j is a subchannel index, and w_j is a weight.

6. (Currently Amended) The method of claim 1, ~~wherein (c)~~further ~~comprises~~ comprising :

removing unnecessary noise of a frequency band by ~~enabling~~ filtering the tracked phase offset. ~~to pass through a loop filter; and~~

~~enabling the signal that has passed through the loop filter to pass through a digital voltage control oscillator, and applying the signal for compensation of the phase offset of the signal received at the next symbol interval.~~

7. (Original) The method of claim 1, wherein the first signal has passed through a frequency domain equalizer.

8. (Currently Amended) A device for tracking a carrier frequency offset and a sampling frequency offset in an OFDM (orthogonal frequency division multiplexing) wireless communication system, including a transmitter that concurrently transmits orthogonal subcarriers and a receiver that receives them, comprising:

an analog/digital converter for converting a signal received by the receiver into a digital signal;

a guard interval remover for removing a guard interval from the converted digital signal;

an FFT (fast Fourier transform) unit for transforming the guard-interval-removed signal into a signal in a frequency domain;

an FEQ (frequency domain equalizer) for recovering a signal distorted by a communication channel from the converted signal in the frequency domain; and

an offset tracker/compensator for tracking a phase offset caused by the carrier frequency offset and the sampling frequency offset and compensating for the same by using the signal received from the FEQ, tracking the phase offset caused by the sampling frequency offset includes calculating a gradient value of a straight line that corresponds to the phase offset on the time axis by using a linear regression method.

9. (Original) The device of claim 8, wherein the offset tracker/compensator detects data received from the transmitter by using the signal received from the FEQ, and tracks the phase offset caused by the carrier frequency offset and the sampling frequency offset by using the detected received data.

10. (Original) The device of claim 9, wherein the offset tracker/compensator tracks the phase offset in consideration of a gain value of each subchannel on which a pilot signal is provided.

11. (Currently Amended) A recording medium for a method for tracking a carrier frequency offset and a sampling frequency offset between a transmitter that concurrently transmits orthogonal subcarriers and a receiver that receives them, comprising:

(a) detecting data received from the transmitter by using a first signal, and tracking a phase offset caused by the carrier frequency offset using the detected received data;

(b) detecting the data received from the transmitter by using the first signal, and tracking the phase offset caused by the sampling frequency offset using the detected received data, including calculating a gradient value of a straight line that corresponds to the phase offset on the time axis by using a linear regression method;

(c) compensating for the phase offset caused by the carrier frequency offset between the transmitter and the receiver according to the phase offset tracked in (a); and

(d) compensating for the phase offset caused by the sampling frequency offset between the transmitter and the receiver according to the phase offset tracked in (b).